Farming Hindered by Dry Weather

One of the most intense El Niño episodes on record came to an end in 1998. But the dry weather it spawned, and the water restrictions designed to lessen its impact, hampered agriculture for most of the year.

January - April
The strong El Niño episode that began in 1997 reached a peak in January as rainfall waned to very low levels in many parts of the State. For example, the 0.14 inches recorded at Hilo Airport in January was the lowest monthly rainfall total ever observed there. Especially parched were the southern islands where mandatory and voluntary water restrictions became widespread. Farmers in the windward areas of the Big Island, many of whom depend solely on rainfall, were particularly hard hit by the combination of dry weather and water restrictions. On the other hand, harvesting of ginger root was aided by the dry conditions and would result in a record harvest. As winter drew to a close, and El Niño continued to wind down (see chart at right), the persistent high pressure ridges over the State finally began to move north. This generated a more seasonal trade wind pattern and as a result, rainfall began to increase in most windward areas. Leeward sections of all islands, however, remained generally dry.

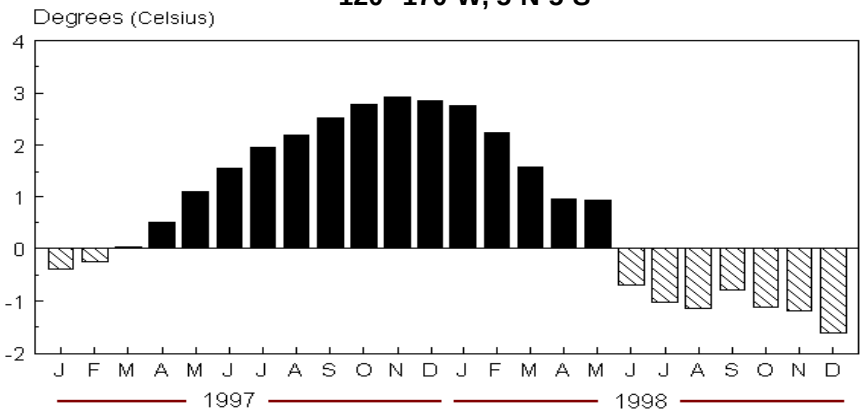
May - September
Many areas of the State experienced near or above normal levels of rainfall during the early months of summer as El Niño faded out. Locales within the flow of trade wind clouds, such as the windward areas of Maui and the Big Island, received the bulk of the restored shower activity. By July, all water restrictions were lifted with the exception of the Big Island's Ka'u District. However, even normal summer conditions were less than ideal for areas that had already endured a dry winter. While a couple of passing fronts provided short-term relief for most crops, long-term water supplies remained a lingering concern for farmers dependent on catchment sources.

October - December
As Hawaii moved into its winter season, trade winds continued to dominate the weather picture. Days were partly to mostly sunny and, except for a period of heavy showers in mid-October and mid-November, rainfall was generally light and limited to the windward areas. The absence of rain-bearing cold fronts, which normally start passing through the State in November, meant that leeward areas would remain relatively dry. Unseasonably strong winds raked across the State in the early part of December. Bush, vine, and trellis crops in exposed areas experienced leaf shredding, loss of flowers, and bruising to fruits. The blustery winds were shortly followed by the arrival of the season's first cold front in mid-December. Before the end of the year, two additional cold fronts would bring moderate to heavy showers to all parts of the State. This late start to the winter season, and the earlier dry conditions caused by El Niño, resulted in most areas of the State recording below average rainfall for the year.

Sea Surface Temperatures and El Niño

One characteristic of an El Niño phase is the warming of waters in the Central and Eastern Pacific. Sea surface temperature (SST) anomalies, therefore, are an easy way to see an El Niño. The chart below displays monthly temperature anomalies recorded in an equatorial area almost directly south of Hawaii.

Monthly Sea Surface Temperature Anomaly
120°-170°W, 5°N-5°S



Source: National Oceanic & Atmospheric Administration, Department of Commerce.